REMARKS / ARGUMENTS

This application is believed to be in condition for allowance because the claims are believed to be non-obvious and patentable over the cited references. The following paragraphs provide the justification for this belief. In view of the following reasoning for allowance, the Applicant hereby respectfully requests further examination and reconsideration of the subject patent application.

1.0 Rejections of Claims 1-13 and 24-30 under 35 U.S.C. §112, First Paragraph:

In the Office Action of December 27, 2007, claims 1-13 and 24-20 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully traverse these rejections.

In particular, the Office Action suggests that the newly amended claim 1 and 24 state:

> "…that "said external computing device performing all audio processing of the captured audio signal", however, the specification and the drawing as originally [filed] fail to provide support for this newly added limitation. ***The self calibration unit uses the captured audio signal to perform the measurement and calibration***. Therefore, the external computing device does not perform all audio processing of the captured audio signal as specified in claims 1 and 24" (emphasis added).

Applicants respectfully suggest that the Office Action has incorrectly characterized the claimed microphone array. In fact, it should be clear that ***the self calibration unit does not use the captured audio signal to perform the measurement and calibration.*** In particular, in stark contrast to the position advanced by the Office Action, neither the specification nor the drawings of the present application describe or in any way suggest

that the self-calibration unit "…uses the captured audio signal to perform the measurement and calibration." In fact, the microphone array specifically uses ***synthetic impulses that are generated internally and injected into the system to measure preamplifier responses***. For example, paragraph [0069] of the published application (US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371)) describes this idea as follows:

> "In another embodiment, the self-descriptive microphone array 300 includes a self calibration system 345 which automatically determines a current state of one or more of the components of the microphone array. This current state is then used to automatically update one or more of the operational characteristics stored in the microphone array memory 340. For example, in one embodiment, ***the self calibration system 345 automatically determines preamplifier 330 impulse responses***. In general, this determination is made ***by providing a "pulse injection circuit" for injecting a precise low-amplitude analog pulse at the input of the preamplifier 330***. The precise impulse ***response of the preamplifier 330 is then measured for computing frequency-domain compensation gains for each preamplifier which serve to provide a consistent output from each amplifier regardless of the operational characteristics of each microphone/preamplifier combination***. Repeating this process for each preamplifier and storing the resulting preamplifier 330 frequency-domain compensation gains in the microphone array memory 340 allows for precise configuration of audio processing software residing on the external computing device 290 using the frequency-domain compensation gains for each preamplifier."

In other words, the self calibration system described by the applicants provides a novel process for calibrating microphone/preamplifier combinations ***in the absence of an audio signal*** by internally creating and injecting a "…precise low-amplitude analog pulse at the input of the preamplifier…" Further, as specifically described by the Applicants, one advantage provided by this type of self-calibration is that the input sensitivity of the actual microphones is not relevant to the calibration since it is the specific output of the

preamplifiers that is matched by using the internally generated "precise low-amplitude analog pulse."

Consequently, it should be clear that there is absolutely no support for the assertion advanced by the Office Action that the "*…self calibration unit uses the captured audio signal to perform the measurement and calibration. Therefore, the external computing device does not perform all audio processing of the captured audio signal as specified in claims 1 and 24*." In fact, as discussed with respect to paragraph [0069] of the present application, the assertion advanced by the Office Action regarding the self-calibration described by the Applicants ***directly contradicts the specific teachings of the present specification***. As such, Applicants respectfully traverse the rejection of claims 1-13 and 24-20 under 35 U.S.C. §112, first paragraph.

2.0 Rejections of Independent Claims 1, 14 and 24 under 35 U.S.C. §102(e):

In the Office Action of July 3, 2007, claims 1, 2, 7, 8, 14-18, 21, 22, 26, 27, 29 and 30 were rejected under 35 U.S.C. §102(e) as being anticipated by ***Arndt*** (US 6,954,535).

A rejection under 35 USC §102(e) requires that the Applicant's invention was described in patent granted on an application for patent by another filed in the United States before the invention thereof by the Applicant. To establish that a patent describes the Applicant's invention, *all of the claimed elements of an Applicant's invention must be considered, especially where they are missing from the prior art*. If a claimed element is not taught in the referenced patent, then a rejection under 35 USC §102(e) is not proper, as the Applicant's claimed devices, methods and systems can be shown to be patentably distinct from the cited reference.

In view of the following discussion, the Applicants will show that one or more elements of the Applicants claimed devices, methods, and systems are missing from the cited art, and that the Applicants claimed devices, methods, and systems are therefore patentable over that cited art.

2.1 Rejection of Claims 1, 2, 7 and 8:

In general, the Office Action rejected independent claim 1 under 35 USC §102(e) based on the rationale that the ***Arndt*** reference teaches the Applicants' claimed microphone array. However, in view of the following discussion, Applicant will show that the ***Arndt*** reference does not teach the Applicants claimed microphone array, and that the claimed microphone array is therefore patentable over the cited art.

In particular, the Office Action first suggests that the ***Arndt*** reference discloses the claimed limitation of "a memory contained within the array, said memory including parametric information which defines operational characteristics and configuration of the array." Specifically, the Office Action suggests that the "memory (21)" of the ***Arndt*** reference discloses this limitation with respect to col. 4, lines 16-19, of the ***Arndt*** reference.

However, col. 4, lines 16-19, of the ***Arndt*** reference specifically explains that the memory (i.e., the "internal storage unit 21") merely includes different sets of filter parameters that can be activated for "adapting to different hearing situations…" Further, it is also clear that the filter parameters described by the ***Arndt*** reference are computed by the ***external*** "measuring and evaluation unit 9" and are then transferred to the filters, and may be stored in the memory 21. In particular, col. 3, lines 37-42, of the ***Arndt*** reference recites the following:

> "The ***measuring and evaluation unit 9 calculates filter parameters*** from the registered directional diagram. These ***filter parameters, via the signal path 16, can be transferred to filters 4, 5 that can be parameterized*** and that are connected downstream with respect to the microphones 2, 3 of the hearing aid 1." (emphasis added)

Further, col. 4, lines 15-21, of the ***Arndt*** reference recites the following:

> "***Moreover, the filter parameters can be stored in an internal storage unit 21*** of the hearing aid 1 in the exemplary embodiment. Therefore, a number f sets of filter parameters, for different directional characteristics, can be stored and can be activated if required, for example, for adapting to different hearing situations." (emphasis added)

In other words, the ***Arndt*** reference merely provides a teaching wherein particular filter characteristics ***for processing captured audio signals*** are computed by an external computing device. The ***Arndt*** reference then discloses that these externally computed filter characteristics can be stored in an internal memory of the "hearing aid" described by the ***Arndt*** reference.

In stark contrast, the Applicants are specifically claiming "a memory contained within the array, ***said memory including parametric information which defines operational characteristics and configuration*** of the array…" Further, as specifically claimed, the microphone array captures audio signals then sends them to an external computing device which performs "…all audio processing of the captured audio signals ***in accordance with the parametric information reported to the external computing device***…"

Next, the Office Action suggests that the "parametric information stored in the memory is being reported to the external computing device through the filter outputs." However, Applicants respectfully suggest that this statement regarding transmission of parametric information via the filter outputs is completely without factual support and is in direct contradiction to the teachings of the ***Arndt*** reference.

In particular, as explained above, col. 3, lines 37-42, of the ***Arndt*** reference teaches that the external computing device (i.e., "measuring and evaluation 9") computes the filter

parameters and ***transfers them to the filters***. Further, as explained in col. 3, lines 62-67 with respect to Figure 2 of the ***Arndt*** reference:

> "For calculating the filter parameters, ***the signals picked up by the microphones*** 2, 3, are tapped in the signal paths of the microphones 2, 3, preferably after the parameterizable filters 4 and 5, and ***are supplied to the measuring and evaluation unit 9 via a signal path 17***." (emphasis added)

In other words, the ***filtered*** audio output from the filters described by the ***Arndt*** reference is simply transmitted to the external "measuring and evaluation 9".

Clearly, in contrast to the position advanced by the Office Action, ***transmission of a filtered audio output to an external computing device*** as disclosed by the ***Arndt*** reference is simply ***not*** the same as the claimed limitation regarding reporting "…the parametric information included in the memory… to the external computing device… upon connection of the array to the external computing device…"

Finally, with respect to the claimed limitation regarding transmission of the audio signals from the microphone array for processing, the Office Action suggests that Figure 2 of the ***Arndt*** reference "shows that the signals from microphones are transmitted to external computing device to be processed."

However, as carefully explained in the Applicants prior response, the specific claim limitation is that ***all*** processing of captured audio signals is performed by the external computing device. Applicants explained the advantages of such an array in comparison to one in which some of the audio processing is performed on-board (such as by the filters (4, 5) and the "signal processing unit" (6) of the ***Arndt*** reference which clearly process the captured audio signals before sending them to the "measuring and evaluation unit 9".

In particular, Applicants specifically describe and claim the transmission of "audio signals captured by the microphone array… ***from the microphone array to the external***

computing device..." which then performs "...***all audio processing of the captured audio signals in accordance with the parametric information reported to the external computing device***."

Further, as discussed above, the ***Arndt*** reference discloses that the "measuring and evaluation unit 9" transmits the filter parameters into the "hearing aid" which then uses that information to process the captured audio signals, with the processed audio signals then being transmitted to the "measuring and evaluation unit 9". In stark contrast, as explained above, the claimed microphone array transmits parametric information to the external computing device which then uses that information to process the audio data that is also transmitted from the microphone array to the external computing device.

More specifically, as explained in the prior response, the claimed microphone array passes or transmits all captured audio data to an external computing device for processing of that audio data. This element provides advantages not disclosed or in any way anticipated by the cited ***Arndt*** reference. For example, paragraph [0048] of the specification (US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371)), describes this feature of the claimed microphone array as follows:

> "[0048] Consequently, because the ***self-descriptive microphone array makes use of external computing power, rather than including onboard audio processing hardware and software***, the self-descriptive microphone array is relatively inexpensive to manufacture in comparison to conventional microphone array devices that include onboard audio processing capabilities. Further, because ***external processing power is used for audio processing***, combined applications such as, for example, adaptive beamforming combined with acoustic echo cancellation (AEC) can be easily performed without including expensive audio processing softeare and/or hardware within the array itself. Consequently, one major advantage of moving microphone array audio processing to an external computing device is that it enables conventional conferencing applications... to use

microphone arrays such as the self-descriptive microphone array described herein while significantly reducing microphone array costs."

In contrast to the claimed external audio processing described with respect to the claimed microphone array, the ***Arndt*** reference discloses a "hearing aid" having an integral "signal processing unit **6**" (see FIG. 2 and col. 3, lines 50-67 of the ***Arndt*** reference) that processes sound signals recorded by the microphones (2 and 3) for playback via an integral speaker (i.e., "earphone **7**"). Clearly, the hearing aid device disclosed by the ***Arndt*** reference performs ***internal*** audio processing via integral "signal processing unit **6**". As such, the claimed microphone array is not disclosed by the ***Arndt*** reference.

Therefore, in view of the proceeding discussion, several of the many differences between the claimed microphone array and the "hearing aid" of the ***Arndt*** reference should be clear. In particular, some of these differences are briefly summarized below:

- The claimed microphone array includes a memory that contains parametric information that is ***reported to an external computing device*** for use in ***all*** processing of captured audio data.
    - In contrast, the ***Arndt*** reference teaches that an ***external computing device sends filter characteristics to the hearing aid*** which internally filters ***captured audio signals using the transmitted filter parameters***.

- The claimed microphone array transmits captured audio data to an ***external computing device which performs all processing of the audio data***, in accordance with the ***parametric information transmitted from the array to the external computing device***.
    - In contrast, the "hearing aid" of the ***Arndt*** reference teaches the use of internal "filters" (4, 5) and a "signal processing unit 6" which clearly process the captured audio signals ***before*** sending them to the external "measuring and evaluation unit 9".

Therefore, in view of the preceding discussion, it is clear that independent claim 1 has elements not disclosed in the ***Arndt*** reference. Consequently, the rejection of claim 1 under 35 USC §102(e) is not proper. Therefore, Applicants respectfully traverse the rejection of claims 1, 2, 7 and 8 under 35 USC §102(e) in view of the language of claim 1. In particular, claim 1 recites the following novel language:

"A microphone array, comprising:

an array of at least one microphone;

a memory contained within the array, said ***memory including parametric information which defines operational characteristics and configuration of the array***;

an array interface for connecting the array to an external computing device;

wherein the ***parametric information included in the memory is reported to the external computing device*** via the array interface upon connection of the array to the external computing device; and

wherein ***audio signals captured by the microphone array are transmitted from the microphone array to the external computing devic***e via the array interface, said ***external computing device performing all audio processing of the captured audio signals in accordance with the parametric information reported to the external computing device***." (emphasis added)

2.2 Rejection of Claims 14-18, 21 and 22:

In general, the Office Action rejected independent claim 14 under 35 USC §102(e) based on the rationale that the ***Arndt*** reference teaches the Applicants' claimed method for "…automatically adapting audio processing software for optimally processing audio signals captured by a microphone array…" However, in view of the following discussion, Applicant will show that the ***Arndt*** reference does not teach the Applicants claimed method, and that the claimed method is therefore patentable over the cited art.

Further, it should also be noted that the present Office Action appears to address only the limitations of independent claim 1 while simply listing independent claim 14 in the

preamble of the discussion regarding the rejection of claim 1. As such, Applicants respectfully suggest that the limitations of independent claim 14 have not been fully examined. As such, Applicants believe that the rejection of claim 14 is not supported and must be withdrawn. However, for purposes of completeness, Applicants will address the specific arguments presented by the Office Action with respect to independent claim 1 as they may or may not apply to independent claim 14.

In particular, the Office Action first suggests that the ***Arndt*** reference discloses "a memory (21) contained within the array, said memory including parametric information which defines operational characteristics and configuration of the array." Specifically, the Office Action suggests that the "memory (21)" of the ***Arndt*** reference discloses this limitation with respect to col. 4, lines 16-19, of the ***Arndt*** reference.

However, col. 4, lines 16-19, of the ***Arndt*** reference specifically explains that the memory (i.e., the "internal storage unit 21") merely includes different sets of filter parameters that can be activated for "adapting to different hearing situations…" Further, it is also clear that the filter parameters described by the ***Arndt*** reference are computed by the ***external*** "measuring and evaluation unit 9" and are then transferred to the filters, and may be stored in the memory 21. In particular, col. 3, lines 37-42, of the ***Arndt*** reference recites the following:

> "The ***measuring and evaluation unit 9 calculates filter parameters*** from the registered directional diagram. These ***filter parameters, via the signal path 16, can be transferred to filters 4, 5 that can be parameterized*** and that are connected downstream with respect to the microphones 2, 3 of the hearing aid 1." (emphasis added)

Further, col. 4, lines 15-21, of the ***Arndt*** reference recites the following:

> "***Moreover, the filter parameters can be stored in an internal storage unit 21*** of the hearing aid 1 in the exemplary embodiment. Therefore, a number f sets of filter

parameters, for different directional characteristics, can be stored and can be activated if required, for example, for adapting to different hearing situations." (emphasis added)

In other words, the ***Arndt*** reference merely provides a teaching wherein particular filter characteristics ***for processing captured audio signals*** are computed by an external computing device. The ***Arndt*** reference then discloses that these externally computed filter characteristics can be stored in an internal memory of the "hearing aid" described by the ***Arndt*** reference.

In stark contrast, the Applicants do not specifically claim a "memory" that contains parametric information. Instead, Applicants specifically recite limitations wherein "…the ***microphone array automatically determines the current configuration upon being coupled to the external computing device*** via the computer interface…" Further, Applicants specifically claim that "…the microphone array ***automatically reports the current configuration to the external computing device*** via the computer interface ***after the microphone array automatically determines the current configuration***."

Neither of these two limitations is specifically addressed by the current rejections. However, in rejecting claim 1, the Office Action does state that the "***parametric information stored in the memory*** is being ***reported to the external computing device through the filter outputs***." However, Applicants respectfully suggest that this statement regarding transmission of parametric information via the filter outputs is completely without factual support and is in direct contradiction to the teachings of the ***Arndt*** reference.

In particular, as explained above, col. 3, lines 37-42, of the ***Arndt*** reference teaches that the external computing device (i.e., "measuring and evaluation 9") computes the filter parameters and ***transfers them to the filters***. Further, as explained in col. 3, lines 62-67 with respect to Figure 2 of the ***Arndt*** reference:

> "For calculating the filter parameters, ***the signals picked up by the microphones*** 2, 3, are tapped in the signal paths of the microphones 2, 3, preferably after the parameterizable filters 4 and 5, and ***are supplied to the measuring and evaluation unit 9 via a signal path 17***." (emphasis added)

In other words, the ***filtered*** audio output from the filters described by the ***Arndt*** reference is simply transmitted to the external "measuring and evaluation 9".

Clearly, in contrast to the position advanced by the Office Action, ***transmission of a filtered audio output to an external computing device*** as disclosed by the ***Arndt*** reference is simply ***not*** the same as the claimed limitations regarding automatically determining "…***the current configuration upon being coupled to the external computing device***…" and automatically reporting "…***the current configuration to the external computing device***…"

Finally, with respect to transmission of the audio signals from the microphone array to an external computing device for processing, in rejecting claim 1, the Office Action suggests that Figure 2 of the ***Arndt*** reference "shows that the signals from microphones are transmitted to external computing device to be processed."

However, as carefully explained in the Applicants prior response, the specific claim limitation is that ***all*** processing of captured audio signals is performed by the external computing device. Applicants explained the advantages of such an array in comparison to one in which some of the audio processing is performed on-board (such as by the filters (4, 5) and the "signal processing unit" (6) of the ***Arndt*** reference which clearly process the captured audio signals before sending them to the "measuring and evaluation unit 9".

In particular, claim 14 specifically recites limitations wherein audio processing software ***in an external computing device*** is automatically configured based on ***configuration information transmitted from the array*** to the external computing device.

Then, that audio processing software in the external computing device is used to process the audio signals captured by the microphone array. Specifically, claim 14 recites the following limitations with respect to this issue:

> "...automatically configure ***audio processing software operating within an external computing device*** to reflect a current configuration of a microphone array;
>
> said automatically configured audio processing software being used ***for processing audio signals captured by the microphone array***..."

Clearly, these elements provide advantages not disclosed or in any way anticipated by the cited ***Arndt*** reference. For example, paragraph [0048] of the specification ((US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371)), describes this feature of the claimed method as follows:

> "[0048] Consequently, because the ***self-descriptive microphone array makes use of external computing power, rather than including onboard audio processing hardware and software***, the self-descriptive microphone array is relatively inexpensive to manufacture in comparison to conventional microphone array devices that include onboard audio processing capabilities. Further, because ***external processing power is used for audio processing***, combined applications such as, for example, adaptive beamforming combined with acoustic echo cancellation (AEC) can be easily performed without including expensive audio processing softeare and/or hardware within the array itself. Consequently, one major advantage of moving microphone array audio processing to an external computing device is that it enables conventional conferencing applications... to use microphone arrays such as the self-descriptive microphone array described herein while significantly reducing microphone array costs."

In contrast to the claimed use of an ***external computing device*** for ***processing audio signals*** using ***automatically configured audio processing software***, as

described with respect to the claimed method, the ***Arndt*** reference discloses a "hearing aid" which includes an ***integral*** "signal processing unit **6**" (see FIG. 2 and col. 3, lines 50-67 of the ***Arndt*** reference) that processes sound signals recorded by the microphones (2 and 3) for playback via integral an integral speaker (i.e., "earphone **7**").

Clearly, the hearing aid device disclosed by the ***Arndt*** reference performs ***internal*** audio processing via integral "signal processing unit **6**". Further, it should also be clear that the hearing aid device disclosed by the ***Arndt*** reference fails to disclose a technique for transmitting captured audio signals to an external computing device. As such, the claimed method is not disclosed by the ***Arndt*** reference.

Therefore, in view of the proceeding discussion, several of the many differences between the claimed method and the "hearing aid" of the ***Arndt*** reference should be clear. In particular, some of these differences are briefly summarized below:

- The claimed method includes a microphone array that automatically determines a ***current configuration*** "upon being coupled to the external computing device" and then reports that configuration information to the external computing device which then automatically configures audio processing software based on that configuration information.
    - In contrast, the ***Arndt*** reference teaches that an ***external computing device sends filter characteristics to the hearing aid*** which internally filters ***captured audio signals using the transmitted filter parameters***.

- The claimed microphone array transmits captured audio data to an ***external computing device which performs the processing of the audio data***, in accordance with the ***automatically determined*** current ***configuration information transmitted from the array to the external computing device***.
    - In contrast, the "hearing aid" of the ***Arndt*** reference teaches the use of an internal "filters" (4, 5) and a "signal processing unit 6" which clearly process

the captured audio signals before sending them to the external "measuring and evaluation unit 9".

Therefore, in view of the preceding discussion, it is clear that independent claim 14 has elements not disclosed in the ***Arndt*** reference. Consequently, the rejection of claim 14 under 35 USC §102(e) is not proper. Therefore, Applicants respectfully traverse rejection of claims 14-18, 21 and 22 under 35 USC §102(e) in view of the language of claim 14. In particular, claim 14 recites the following novel language:

"A ***method for automatically adapting audio processing software for optimally processing audio signals captured by a microphone array***, comprising using a computing device to:

automatically configure ***audio processing software operating within an external computing device*** to reflect a current configuration of a microphone array;

said automatically configured audio processing software being used for processing audio signals captured by the microphone array;

said microphone array including at least one microphone, and said microphone array being coupled to the external computing device via any of a wired and a wireless computer interface;

wherein the microphone array automatically determines the current configuration upon being coupled to the external computing device via the computer interface; and

wherein the microphone array automatically reports the current configuration to the external computing device via the computer interface ***after the microphone array automatically determines the current configuration***." (emphasis added)

2.3 Rejection of Claims 24, 26, 27, 29 and 30:

In general, the Office Action rejected independent claim 24 under 35 USC §102(e) based on the rationale that the ***Arndt*** reference teaches the Applicants' claimed system for

"…automatically providing device configuration information of a microphone array to an external computing device…" However, in view of the following discussion, Applicant will show that the ***Arndt*** reference does not teach the Applicants claimed system, and that the claimed system is therefore patentable over the cited art.

In particular, the Office Action first suggests that the ***Arndt*** reference discloses "a memory contained within the array, said memory including parametric information which defines operational characteristics and configuration of the array." Specifically, the Office Action suggests that the "memory (21)" of the ***Arndt*** reference discloses this limitation with respect to col. 4, lines 16-19, of the ***Arndt*** reference.

However, col. 4, lines 16-19, of the ***Arndt*** reference specifically explains that the memory (i.e., the "internal storage unit 21") merely includes different sets of filter parameters that can be activated for "adapting to different hearing situations…" Further, it is also clear that the filter parameters described by the ***Arndt*** reference are computed by the ***external*** "measuring and evaluation unit 9" and are then transferred to the filters, and may be stored in the memory 21. In particular, col. 3, lines 37-42, of the ***Arndt*** reference recites the following:

> "The ***measuring and evaluation unit 9 calculates filter parameters*** from the registered directional diagram. These ***filter parameters, via the signal path 16, can be transferred to filters 4, 5 that can be parameterized*** and that are connected downstream with respect to the microphones 2, 3 of the hearing aid 1." (emphasis added)

Further, col. 4, lines 15-21, of the ***Arndt*** reference recites the following:

> "***Moreover, the filter parameters can be stored in an internal storage unit 21*** of the hearing aid 1 in the exemplary embodiment. Therefore, a number f sets of filter parameters, for different directional characteristics, can be stored and can be

activated if required, for example, for adapting to different hearing situations." (emphasis added)

In other words, the ***Arndt*** reference merely provides a teaching wherein particular filter characteristics ***for processing captured audio signals*** are computed by an external computing device. The ***Arndt*** reference then discloses that these externally computed filter characteristics can be stored in an internal memory of the "hearing aid" described by the ***Arndt*** reference.

In stark contrast, the Applicants are specifically claiming "...at least one addressable memory... storing parametric information detailing device configuration information of the microphone array..." Further, as specifically claimed, "...the microphone array automatically reads the parametric information from the addressable memory and ***reports the parametric information to the external computing device***..."

Next, the Office Action suggests that the "parametric information stored in the memory is being reported to the external computing device through the filter outputs." However, Applicants respectfully suggest that this statement regarding transmission of parametric information via the filter outputs is completely without factual support and is in direct contradiction to the teachings of the ***Arndt*** reference.

In particular, as explained above, col. 3, lines 37-42, of the ***Arndt*** reference teaches that the external computing device (i.e., "measuring and evaluation 9") computes the filter parameters and ***transfers them to the filters***. Further, as explained in col. 3, lines 62-67 with respect to Figure 2 of the ***Arndt*** reference:

"For calculating the filter parameters, ***the signals picked up by the microphones*** 2, 3, are tapped in the signal paths of the microphones 2, 3, preferably after the parameterizable filters 4 and 5, and ***are supplied to the measuring and evaluation unit 9 via a signal path 17***." (emphasis added)

In other words, the ***filtered*** audio output from the filters described by the ***Arndt*** reference is simply transmitted to the external "measuring and evaluation 9".

Clearly, in contrast to the position advanced by the Office Action, ***transmission of a filtered audio output to an external computing device*** as disclosed by the ***Arndt*** reference is simply ***not*** the same as the claimed limitation "wherein the ***microphone array automatically reads the parametric information*** from the addressable memory and ***reports the parametric information to the external computing device*** via a computer interface…"

Finally, with respect to the claimed limitation regarding transmission of the audio signals from the microphone array for processing, the Office Action suggests that Figure 2 of the ***Arndt*** reference "shows that the signals from microphones are transmitted to external computing device to be processed."

However, as carefully explained in the Applicants prior response, the specific claim limitation is that ***all*** processing of captured audio signals is performed by the external computing device. Applicants explained the advantages of such an array in comparison to one in which some of the audio processing is performed on-board (such as by the filters (4, 5) and the "signal processing unit" (6) of the ***Arndt*** reference which clearly process the captured audio signals before sending them to the "measuring and evaluation unit 9".

In particular, Applicants specifically describe and claim that the "***audio signals captured by the microphone array are transmitted… to the external computing device***…" which then performs "…***all audio processing of the captured audio signals in accordance with the parametric information*** reported to the external computing device."

Further, as discussed above, the ***Arndt*** reference discloses that the "measuring and evaluation unit 9" transmits the filter parameters into the "hearing aid" which then uses that information to process the captured audio signals, with the processed audio signals then

being transmitted to the "measuring and evaluation unit 9". In stark contrast, as explained above, the claimed microphone array transmits parametric information to the external computing device which then uses that information to process the audio data that is also transmitted from the microphone array to the external computing device.

More specifically, as explained in the prior response, the claimed microphone array passes or transmits all captured audio data to an external computing device for processing of that audio data. This element provides advantages not disclosed or in any way anticipated by the cited ***Arndt*** reference. For example, paragraph [0048] of the specification (US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371)), describes this feature of the claimed microphone array as follows:

> "[0048] Consequently, because the ***self-descriptive microphone array makes use of external computing power, rather than including onboard audio processing hardware and software***, the self-descriptive microphone array is relatively inexpensive to manufacture in comparison to conventional microphone array devices that include onboard audio processing capabilities. Further, because ***external processing power is used for audio processing***, combined applications such as, for example, adaptive beamforming combined with acoustic echo cancellation (AEC) can be easily performed without including expensive audio processing softeare and/or hardware within the array itself. Consequently, one major advantage of moving microphone array audio processing to an external computing device is that it enables conventional conferencing applications… to use microphone arrays such as the self-descriptive microphone array described herein while significantly reducing microphone array costs."

In contrast to the claimed external audio processing described with respect to the claimed microphone array, the ***Arndt*** reference discloses a "hearing aid" having an integral "signal processing unit **6**" (see FIG. 2 and col. 3, lines 50-67 of the ***Arndt*** reference) that processes sound signals recorded by the microphones (2 and 3) for playback via an integral speaker (i.e., "earphone **7**"). Clearly, the hearing aid device disclosed by the

Arndt reference performs ***internal*** audio processing via integral "signal processing unit **6**". As such, the claimed microphone array is not disclosed by the ***Arndt*** reference.

Therefore, in view of the proceeding discussion, several of the many differences between the claimed microphone array and the "hearing aid" of the ***Arndt*** reference should be clear. In particular, some of these differences are briefly summarized below:

- The claimed microphone array includes a memory that contains parametric information that is ***reported to an external computing device*** for use in ***all*** processing of captured audio data.
    - In contrast, the ***Arndt*** reference teaches that an ***external computing device sends filter characteristics to the hearing aid*** which internally filters ***captured audio signals using the transmitted filter parameters***.

- The claimed microphone array transmits captured audio data to an ***external computing device which performs all processing of the audio data***, in accordance with the ***parametric information transmitted from the array to the external computing device***.
    - In contrast, the "hearing aid" of the ***Arndt*** reference teaches the use of internal "filters" (4, 5) and a "signal processing unit 6" which clearly process the captured audio signals ***before*** sending them to the external "measuring and evaluation unit 9".

Therefore, in view of the preceding discussion, it is clear that independent claim 24 has elements not disclosed in the ***Arndt*** reference. Consequently, the rejection of claim 24 under 35 USC §102(e) is not proper. Therefore, Applicants respectfully traverse the rejection of claim 24, 26, 27, 29 and 30, under 35 USC §102(e) in view of the language of claim 24. In particular, claim 24 recites the following novel language:

"A system for automatically ***providing device configuration information of a microphone array to an external computing device***, comprising:

a microphone array including at least one microphone, each microphone having a predetermined position in a three-dimensional space relative to the microphone array;

said microphone array further including at least one addressable memory, said addressable memory storing parametric information detailing device configuration information of the microphone array;

wherein the microphone array automatically reads the parametric information from the addressable memory and ***reports the parametric information to the external computing device*** via a computer interface, said external computing device being remotely coupled to the microphone array via the computer interface; and

wherein ***audio signals captured by the microphone array are transmitted from the microphone array to the external computing device*** via the computer interface, said ***external computing device performing all audio processing of the captured audio signals in accordance with the parametric information*** reported to the external computing device." (emphasis added)

3.0 Rejections under 35 U.S.C. §103(a):

The Office Action rejected dependent claims 3-5, 9, 10-12, 13, 19, 20, 23, and 25 under 35 U.S.C. §103(a) based on the rationale that the ***Arndt*** reference discloses the Applicants claimed devices, systems and methods when combined with various additional references. However, as discussed above in Sections 2.1 through 2.3, the parent claims (i.e., claims 1, 14 and 24) of dependent claims 3-5, 9, 10-12, 13, 19, 20, 23, and 25 have been shown to be allowable in view of the cited ***Arndt*** reference. Therefore, the use of additional references in an attempt to address particular features of various dependent claims fails to show a prima facie case of obviousness as required under 35 U.S.C.

§103(a). Therefore, the Applicants respectfully traverse the rejection of claims 3-5, 9, 10-12, 13, 19, 20, 23, and 25 in view of the patentability of their respective parent claims, as discussed above.

CONCLUSION

In view of the above, it is respectfully submitted that claims 1-30 are in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of claims 1-30 and to pass this application to issue. Additionally, in an effort to further the prosecution of the subject application, the Applicant kindly invites the Examiner to telephone the Applicant's attorney at (805) 278-8855 if the Examiner has any questions or concerns.

Respectfully submitted,

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